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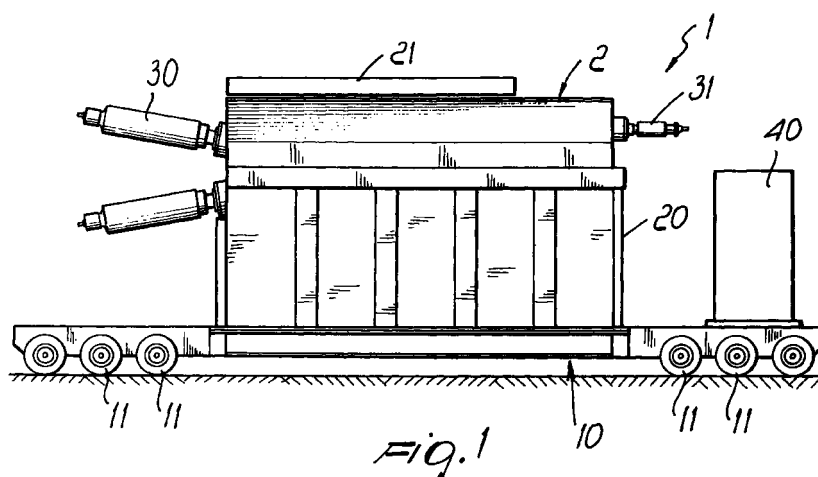
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(54) **Transformer, particularly for mobile and relocatable substations for the transmission and distribution of electric power at high, medium and low voltage**

(57) A transformer particularly for mobile and relocatable substations for the transmission and distribution of electric power at high, medium and low voltage, comprising a self-supporting tank for containing the active part of a transformer. The bottom of the tank constitutes

a chassis which can be associated with wheels in order to form a transport truck which is integrated with the tank.



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Description

[0001] The present invention relates to a transformer particularly for mobile and relocatable substations for the transmission and distribution of electric power at high, medium and low voltage.

[0002] It is known that in the field of power transformers for applications in the fields of high, medium and low-voltage electric power transmission and distribution, so-called mobile transformers. They are used which have the characteristic of being able to be moved easily and quickly from one operating location to another.

[0003] Transformers for mobile and relocatable substations are currently machines which are produced in a substantially conventional manner, i.e., according to the typical standards of a static transformer, and are placed on a trailer or on a flatbed truck to be carried to the site where they are to be used.

[0004] The only difference with respect to a conventional transformer, which is stably anchored to the ground, is the fact that the arrangement of the feedthrough insulators, of the cooling system, of the oil expansion reservoir and the like is changed purely to contain the overall dimensions and therefore remain within the road transport clearance profile.

[0005] Accordingly, the design of these transformers is performed ad hoc in each instance, so as to be able to fulfill to the needs of the various users, who generally have different requirements as regards electric specifications according to the country and/or power net in which the machine is to be installed.

[0006] Substantially, therefore, the choice of dimensions, including those of the outer part of the transformer, is revised each time, entailing a considerable design stage for each manufactured machine.

[0007] The aim of the present invention is to solve the above problem, by providing a transformer particularly for mobile and relocatable stations for the transmission and distribution of electric power at high, medium and low voltage in which it is possible to provide a specifically designed structure for the mobile transformer, without merely adapting the arrangement of the accessories with respect to the conventional transformers.

[0008] Within the scope of this aim, a particular object of the present invention is to provide a transformer in which the tank can be kept the same and it is sufficient to produce only the active part of the transformer according to specific requirements.

[0009] Another object of the present invention is to provide a mobile transformer which is already in the operating configuration and can be easily and quickly installed at various sites and in different substations so as to be immediately ready for use.

[0010] Another object of the present invention is to provide a transformer which is always within road clearance profile limits, consequently avoiding the need to apply for special transport permits and allowing the user

to move the machine at any time without any problem.

[0011] This aim, these objects and others which will become apparent hereinafter are achieved by a transformer particularly for mobile and relocatable substations for the transmission and distribution of electric power at high, medium and low voltage, according to the invention, characterized in that it comprises a self-supporting tank for containing the active part of the transformer, the bottom of said tank constituting a chassis which can be associated with wheels in order to form a transport truck which is integrated with said tank.

[0012] Further characteristics and advantages of the present invention will become apparent from the following detailed description of a preferred but not exclusive embodiment of a transformer particularly for mobile and relocatable substations for the transmission and distribution of electric power at high, medium and low voltage, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a schematic side elevation view of the transformer according to the invention;

Figure 2 is a schematic sectional view of the transformer, taken along a transverse plane.

[0013] With reference to the above figures, the transformer particularly for mobile and relocatable substations for the transmission and distribution of electric power at high, medium and low voltage, according to the invention, generally designated by the reference numeral 1, comprises a self-supporting tank 2 which internally contains the active part of the transformer 3, which is typically constituted by a lamination core 4 and by corresponding windings 5.

[0014] The relevant characteristic of the invention is constituted by the fact that the bottom 10 of the tank constitutes a chassis which directly forms axles for the wheels 11, thus constituting a transport truck which is integrated directly with the tank.

[0015] In this embodiment, therefore, the tank 2 is not merely the element for containing the active part of the transformer but it is an integrated element which directly provides the means for transporting and thus allows to have the transformer always ready for transfer to the location where it is to be used.

[0016] A bell-shaped element 20 is superimposed on the bottom 10 through the interposition of a suitable sealing element and forms the container of the active part of the transformer which, as is typical, is fully immersed in oil.

[0017] The bell-shaped element 20 is provided, in an upward region, with an oil expansion reservoir 21, thus obtaining a perfectly integrated system.

[0018] In order to allow the transformer to be transported within road clearance profiles, the high-voltage output insulators, designated by the reference numeral 30, are arranged directly at the front wall of the bell-

shaped element 20, while the low-voltage output insulators, designated by the reference numeral 31, are provided in the rear part, i.e., on the opposite wall.

[0019] Moreover, on the bottom that forms the wheeled bed it is possible to provide for a cooling system designated by the reference numeral 40.

[0020] With this embodiment, a modular structure is provided which is constituted by the bottom and the bell-shaped elements and in which the active part of the transformer is inserted. The active part is the only one that needs to be redesigned according to the electrical characteristics required by the various users, while all the outer parts, in addition to the tank, remain unchanged.

[0021] It is evident that this aspect allows cost savings, significantly reducing design, and also reduces delivery times, since design times are particularly short.

[0022] From the above description it is therefore evident that the invention achieves the intended aim and objects, and in particular the relevant fact is that a transformer is provided in which the outer casing that forms the tank of the transformer has a part, specifically the bottom, which also acts as a self-supporting chassis, which can be associated with wheels so that it directly forms the vehicle for transporting the transformer.

[0023] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0024] All the details may also be replaced with other technically equivalent elements.

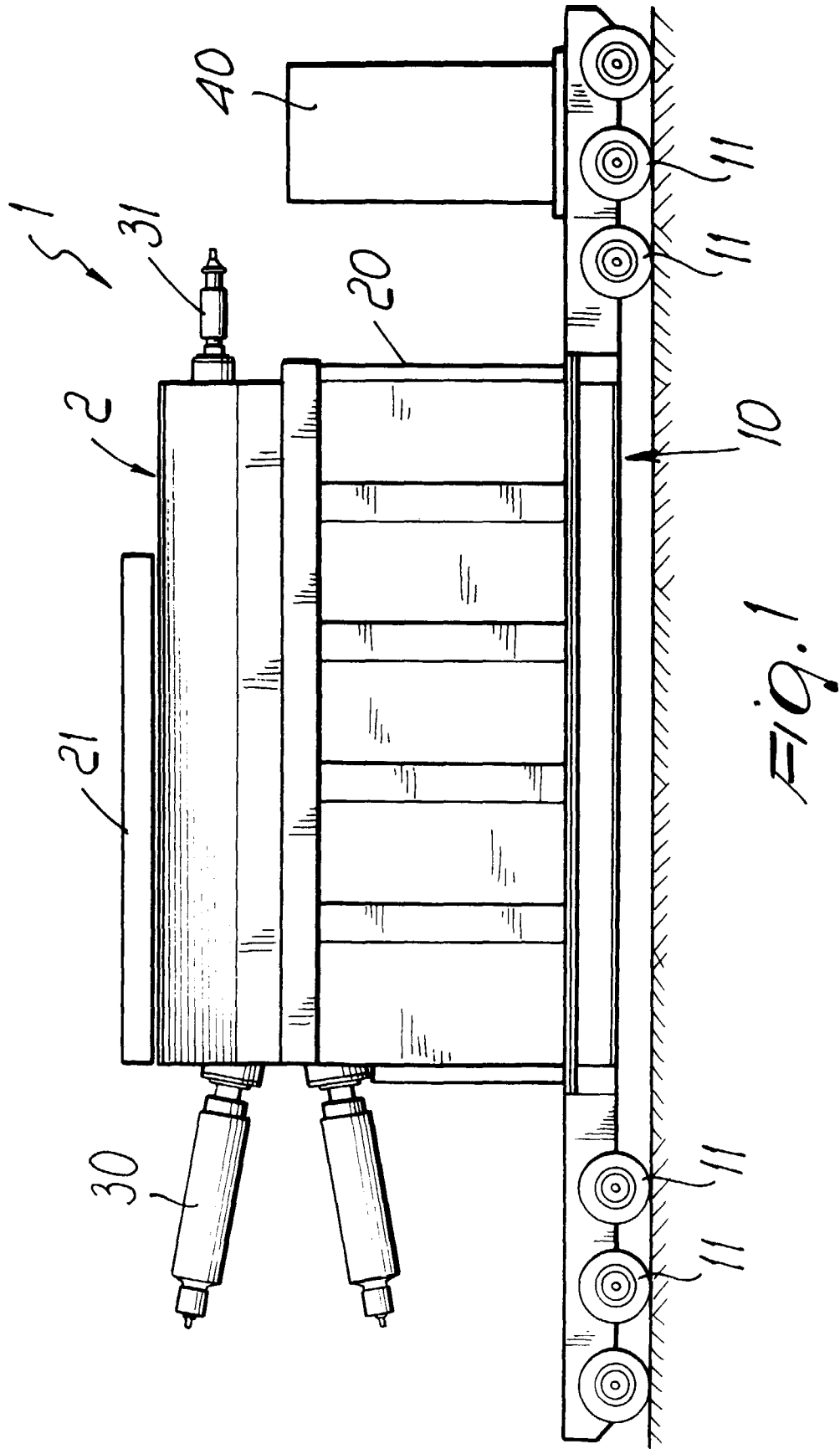
[0025] In practice, the materials employed, as well as the contingent shapes and dimensions, may be any according to requirements.

Claims

1. A transformer particularly for mobile and relocatable stations for the transmission and distribution of electric power at high, medium and low voltage, characterized in that it comprises a self-supporting tank for containing the active part of the transformer, the bottom of said tank constituting a chassis which can be associated with wheels in order to form an integrated truck for the transport of said tank.
2. The transformer particularly for mobile and relocatable substations, according to claim 1, characterized in that it comprises a bell-shaped body which is hermetically associated with said bottom in order to form said tank.
3. The transformer particularly for mobile and relocatable substations, according to claims 1 and 2, characterized in that it comprises an oil expansion reservoir which is arranged above said bell-shaped element.

4. The transformer particularly for mobile and relocatable substations, according to one or more of the previous claims, characterized in that it comprises insulators for the high-voltage output which protrude from the front wall of said bell-shaped body and insulators for the low-voltage output which protrude from the opposite wall.

5. The transformer particularly for mobile and relocatable substations, according to one or more of the previous claims, characterized in that it comprises a cooling system on said bottom.



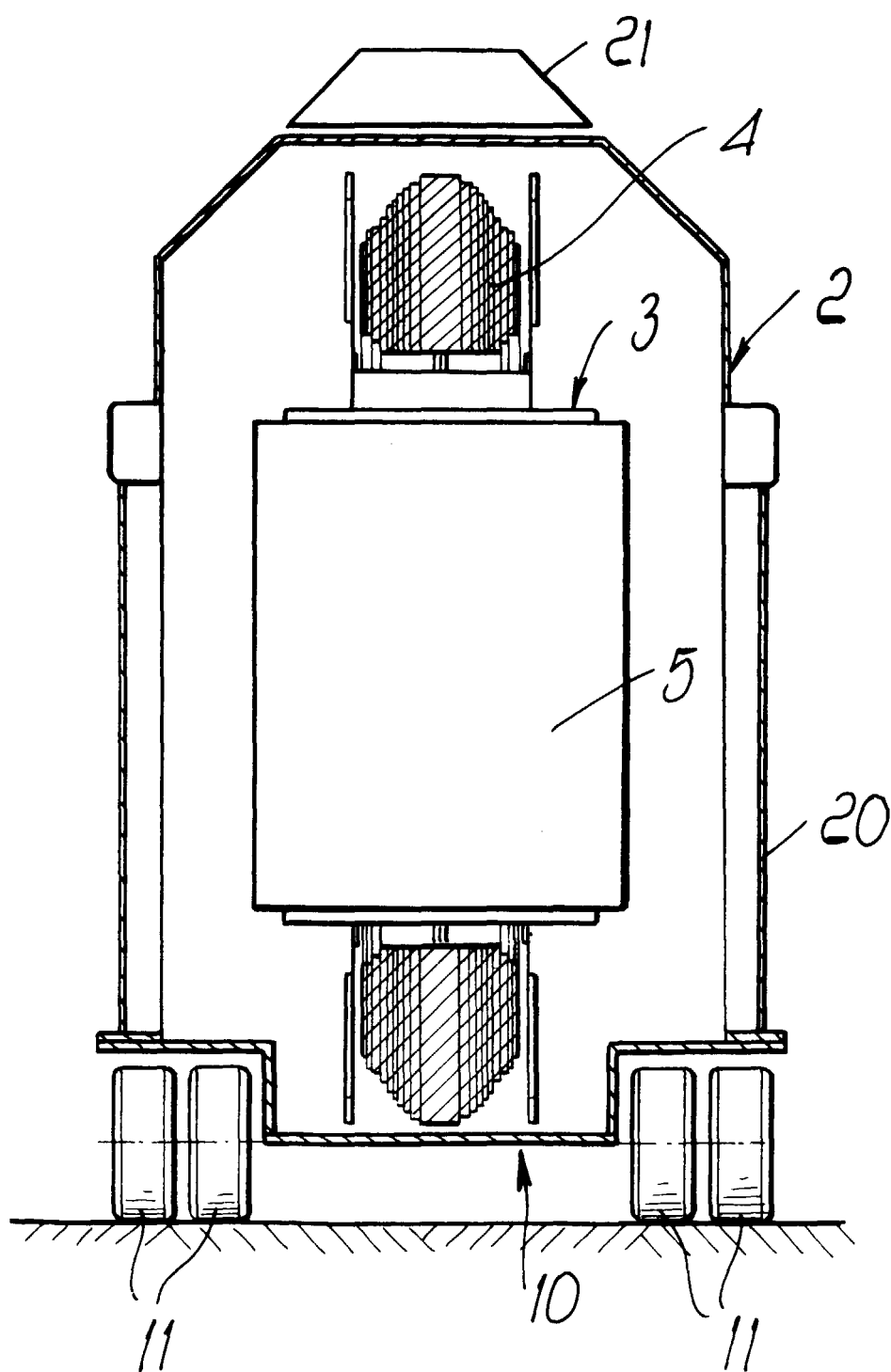


Fig. 2



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EUROPEAN SEARCH REPORT

Application Number
EP 98 20 3875

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
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X	DE 22 00 334 A (SCHORCH GMBH) 12 July 1973 * page 4, paragraph 5 * ---	1,2	
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			H01F
Place of search		Date of completion of the search	
THE HAGUE		12 April 1999	
		Examiner	
		Vanhulle, R	
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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